

GENTIANA NIVALIS L. (GENTIANACEAE)
NEW TO QUÉBEC

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During the course of ecological field work conducted on the northeast coast of James Bay in 1994, we collected a few specimens of a very small gentian, which proved to be *Gentiana nivalis* L. This arctic-alpine taxon is here reported as new to the flora of Québec.

Gentiana nivalis is an amphi-atlantic species (Hultén, 1958), the range of which is mainly Eurasian (Iceland, Northern and Central Europe, and Asia Minor). Previous to this report, the North American distribution of the taxon was thought to be restricted to coastal areas of Greenland and Labrador (Rousseau, 1974; Scoggan, 1979). The species has never been reported from Baffin Island, and Gillett (1963) states that this distribution pattern is due to a different postglacial history for Baffin Island from that of northern Labrador, rather than due to a collection gap. Most of the Labrador localities are north of 57°30'N, especially in the Kaumajet and the Torngat mountains. *Gentiana nivalis* is listed as rare in Canada and in Labrador (Argus and Pryer, 1990). In 1951, the plant was discovered in the Saglek Pass (Rousseau 1064 QUE) on the Québec-Labrador border. The specimen does not indicate on which side of the border the collection was made. This note is therefore the first valid report for the species in Québec.

We collected *Gentiana nivalis* 17 km east of Pointe Louis-XIV (Dignard, Lalumière & Julien 94-29 QUE) on July 23, 1994, in the tundra bordering the northeast coast of James Bay (Figure 1). This region, lying within the discontinuous permafrost zone, is characterized by the predominance of an arctic-alpine flora. The area is one of the southernmost Arctic outposts in North America (Ducruc et al., 1976), extending between 54°30'N and 54°45'N, along a strip five to 20 km wide parallel to the coast. The population was found in a dry, grassy meadow on an alluvial terrace of fine sand along a small brook, four km from the sea at 54°37'18"N–79°28'15"W, elevation ca. 20 m. Only a few individuals were observed. Unfortunately, time did not allow us to

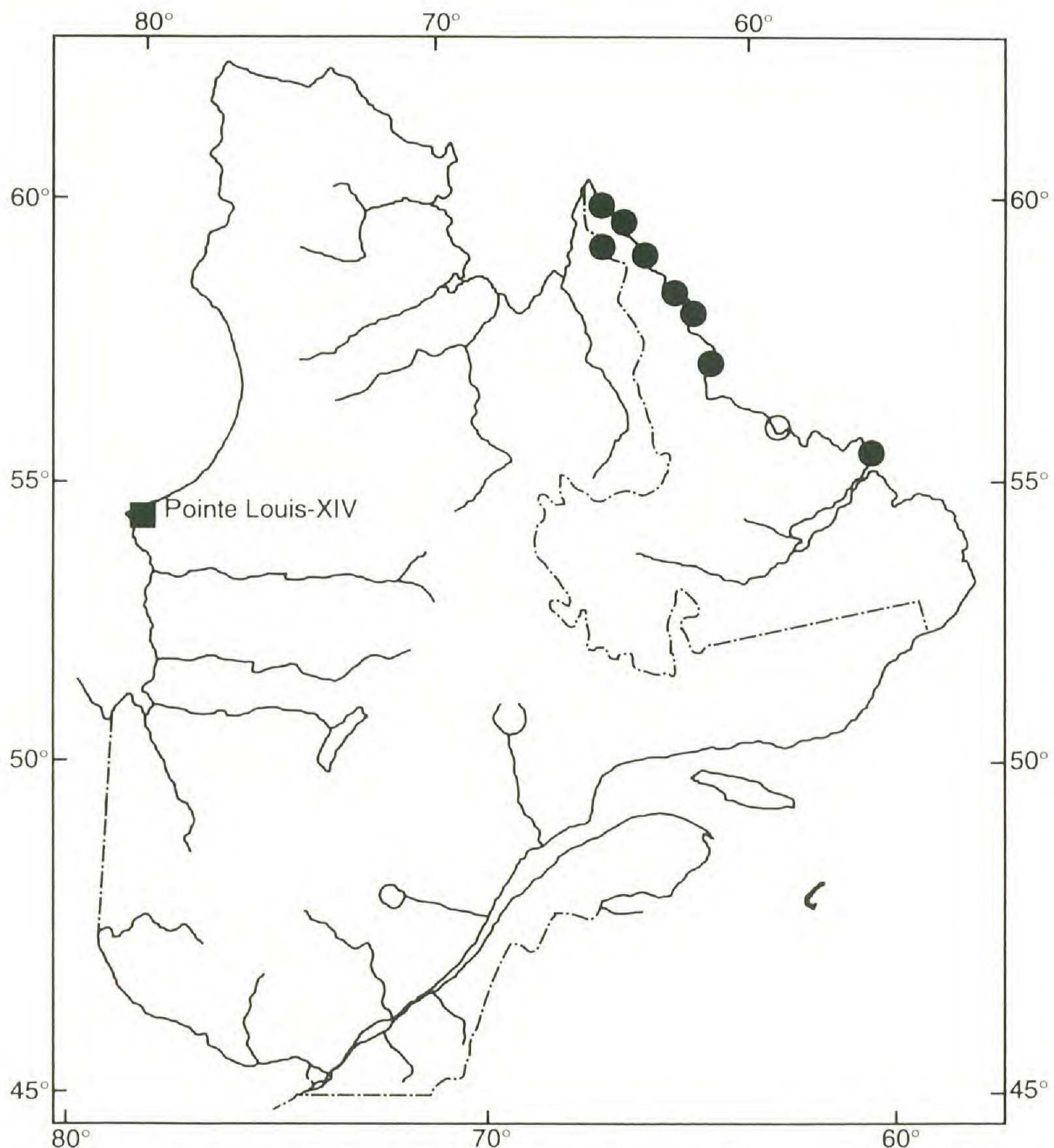


Figure 1. Distribution of *Gentiana nivalis* L. in Québec and Labrador (expanded from Gillett, 1963 and Rousseau, 1974). Square indicates the new locality.

check for its presence in the surrounding area. The terrace vegetation consisted of arctic-alpine and boreal species, the most representative being *Achillea millefolium* L. var. *nigrescens* E. Mey., *Antennaria pulcherrima* (Hook.) Greene, *Astragalus alpinus* L., *Betula nana* L., *Carex capillaris* L., *C. capitata* L., *Cerastium alpinum* L. ssp. *lanatum* (Lam.) Aschers. & Graebn., *Draba glabella* Pursh var. *glabella*, *Juncus arcticus* Willd. ssp. *arcticus*, *Kobresia simpliciuscula* (Wahlenb.) Mackenzie, *Luzula multiflora* (Ehrh.) Lej. s.l., *Poa alpina* L., *P. arctica* R. Br., *Polygonum viviparum* L., *Primula stricta* Hornem., *Salix argyrocarpa* Anderss.,

S. brachycarpa Nutt., *S. planifolia* Pursh ssp. *planifolia*, *Senecio pauciflorus* Pursh, *Tanacetum bipinnatum* (L.) Schultz-Bip. ssp. *huronense* (Nutt.) Breitung, and *Trimorpha elata* (Hook.) Nesom. Located in a depression between two low ridges, the terrace is covered by a thick layer of snow during the winter, as indicated by the presence of the willow and dwarf birch community and by late snowbed species such as *Potentilla tabernae-montani* Aschers, and *Taraxacum officinale* G. H. Weber ex Wiggers ssp. *ceratophorum* (Ledeb.) Schinz ex Thellung. Nomenclature follows Kartesz (1994).

This isolated population of *Gentiana nivalis*, more than 1000 km away from the nearest Labrador locality, is the westernmost occurrence of the species in North America. This wide disjunction could be related to the postglacial history of the taxon and to narrow ecological requirements. The amphi-atlantic boreal *Platanthera albida* (L.) Lindl. var. *straminea* (Fern.) Luer, known from northwest Newfoundland and disjunct in the Richmond Gulf and the Manitounouk Sound on the east coast of Hudson Bay, has a similar distribution (Payette and Lepage, 1977; Deshayé and Cayouette, 1988). Undercollection should also be considered. Due to its small stature, the plant can be easily overlooked, especially when the flowers are immature. It can also be confused in the field with other superficially similar gentians (*Gentianella amarella* (L.) Boerner ssp. *acuta* (Michx.) J. Gillett, *Gentianella tenella* (Rottb.) Boerner and *Lomatogonium rotatum* (L.) Fries ex Fern.). The plicate, eciliate corolla tube, the expanding lobes, and the 4–5 parted cylindrical, purple-keeled calyx of *G. nivalis* at once distinguish this species from others.

It is uncertain whether the new disjunct population of *G. nivalis* is the result of long distance dispersal or is relictual. Long distance dispersal, either by winds or birds, seems unlikely. The prevailing winds are westerly and bird migrations occur primarily in a north-south direction. In addition, the small seeds offer little nutritional value to birds although they could be ingested by accident.

Now that *Gentiana nivalis* is known from the James Bay region and its habitat is better defined, other localities of the species might be discovered in the region and perhaps elsewhere in northern Québec. This was recently the case for the amphi-atlantic arctic-alpine *Carex rufina* Drej. Thought to be disjunct between Greenland, the Northwest Territories, and northern Manitoba

(Porsild and Cody, 1980), it is presently known from at least six localities in the Ungava Peninsula, all restricted to volcanic rock formations (Blondeau and Cayouette, 1987).

Because of its extreme rarity in Québec, *Gentiana nivalis* should be added to the list of the vulnerable or threatened vascular plants of this province (Lavoie, 1992).

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LITERATURE CITED

- ARGUS, G. W. AND K. M. PRYER. 1990. Les plantes vasculaires rares du Canada. Notre patrimoine naturel. Musée canadien de la nature, Ottawa, Ontario.
- BLONDEAU, M. AND J. CAYOUILLE. 1987. Extension d'aire dans la flore vasculaire du Nouveau-Québec. *Naturaliste Canad.* 114: 117-126.
- DESHAYE, J. AND J. CAYOUILLE. 1988. La flore vasculaire des îles et de la presqu'île de Manitousouk, baie d'Hudson: structure phytogéographique et interprétation bioclimatique. *Provancheria* 21.
- DUCRUC, J.-P., R. ZARNOVICAN, V. GERARDIN, AND M. JURDANT. 1976. Les régions écologiques du territoire de la baie de James: caractéristiques dominantes de leur couvert végétal. *Cah. de Géogr. de Québec* 20: 365-392.
- GILLET, J. M. 1963. The gentians of Canada, Greenland and Alaska. *Publ. Dep. Agric. Canad.* 1180: 1-99.
- HULTÉN, E. 1958. The amphi-atlantic plants and their phytogeographical connections. *Almqvist and Wiksell*, Stockholm, Sweden.
- KARTESZ, J. T. 1994. A Synonymized Checklist of the Vascular Flora of the United States, Canada, and Greenland. Vol. 2. *Thesaurus*, 2nd ed. Timber Press, Portland, OR.
- LAVOIE, G. 1992. Plantes vasculaires susceptibles d'être désignées menacées ou vulnérables au Québec. Ministère de l'Environnement, Québec, Québec.
- PAYETTE, S. AND E. LEPAGE. 1977. La flore vasculaire du golfe de Richmond, Nouveau-Québec. *Provancheria* 7.
- PORSILD, A. E. AND W. J. CODY. 1980. Vascular Plants of Continental Northwest Territories, Canada. National Museum of Natural Sciences, Ottawa, Ontario.
- ROUSSEAU, C. 1974. Géographie floristique du Québec-Labrador. Distribution des principales espèces vasculaires. Presses Univ. Laval, Québec, Québec.
- SCOGGAN, H. J. 1979. The flora of Canada. Part 4. *Publ. Bot. (Ottawa)* 7: 1117-1711.

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